

Metamodel Backbone for SAFE project Base for SAFE technology platform

Req-IF

MM: OMG (www.omg.org/spec/ReqIF)

Toolplatform: RMF project (<http://www.eclipse.org/proposals/modeling.mdt.rmf/>)

EAST-ADL

MM: EAST-ADL Association (www.east-adl.info)

Toolplatform: EATOP (TBD.)

HW

SW

AUTOSAR

MM: AUTOSAR (www.autosar.org)

Toolplatform: ARTOP (www.artop.org)

IP-XACT

MM: IEEE 1685-2009 (<http://standards.ieee.org/getieee/1685/download/1685-2009.pdf>)

Toolplatform: XMLSchema (<http://www.accellera.org/XMLSchema/SPIRIT>)

Eclipse Editor (http://www.eclipse.org/home/categories/embedded_device.php)

SAFE Technology Platform

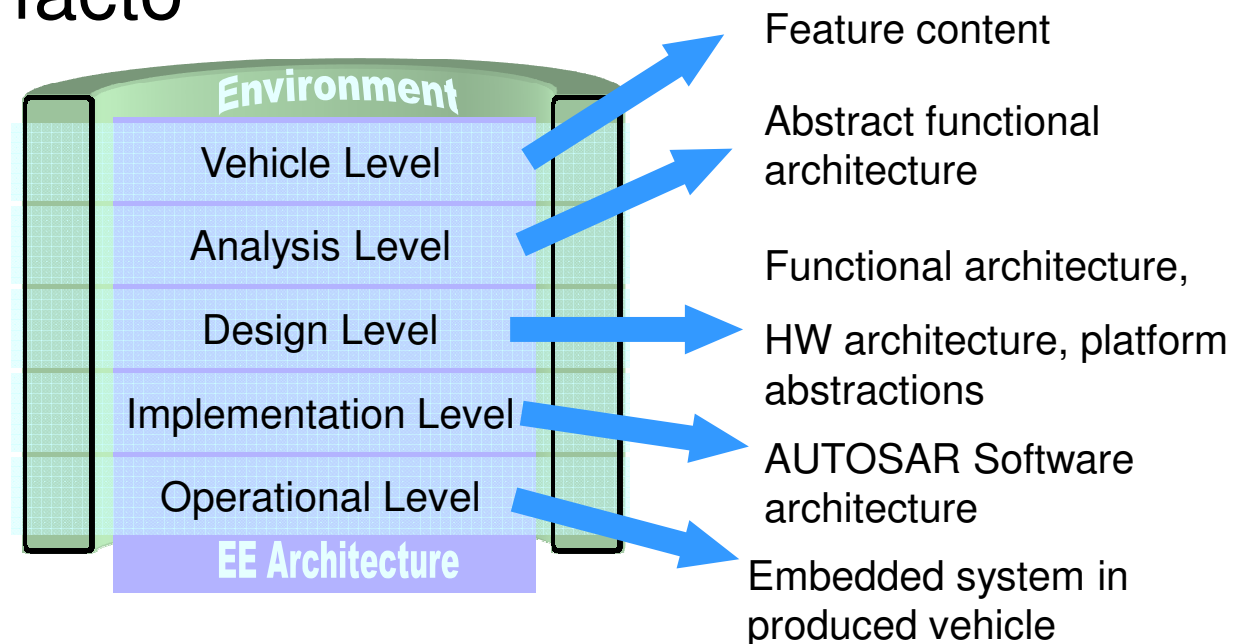
MM:
SAFE project (WP3,
www.safe-project.eu)

Toolplatform:
SAFE project (WP4)
&
Eclipse A-IWG
(www.eclipse.org/Auto_IWG)

EAST-ADL

- A System Modeling Approach that
 - Is a template for how engineering information is organized and represented
 - Provides separation of concerns
 - Embrace the de-facto

representation of automotive software – AUTOSAR



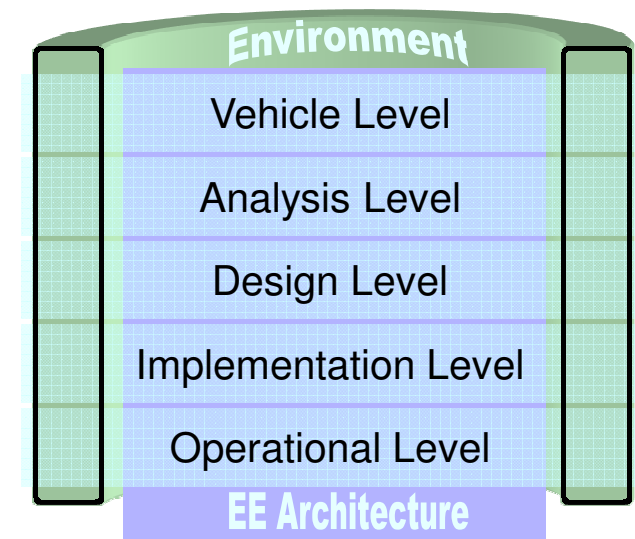
Use of Different Abstraction Levels

- **Separation of Concerns**

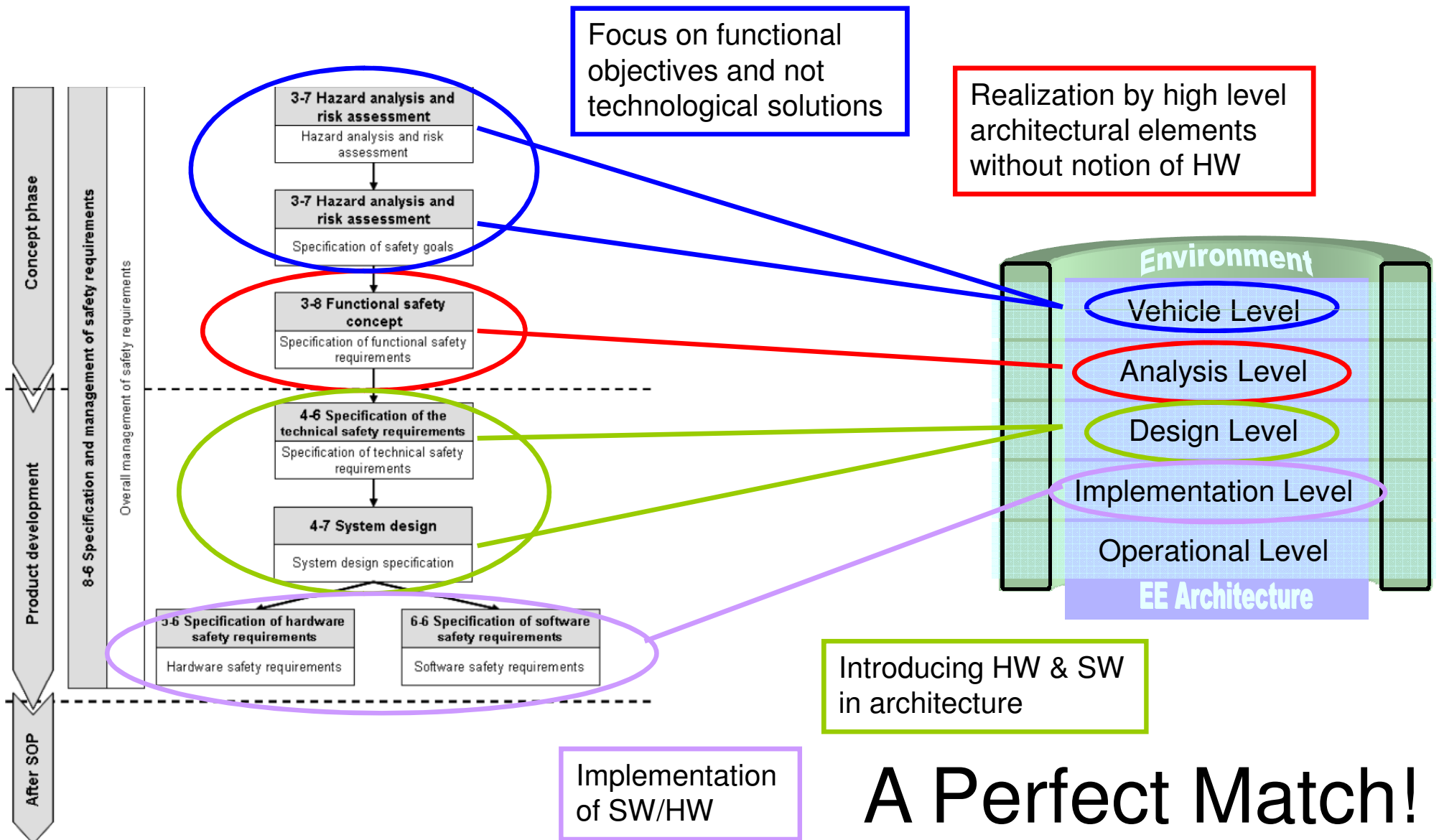
- Problem/Need vs. Solution
- Abstract Function vs. Realization details
- Functional Description vs. Software Architecture
- Hardware Topology vs. Detailed Component characteristics

- **Architectural Refinement**

- Higher level describes intended functionality
- Lower level refines/optimizes/rearranges solution to meet architectural constraints



Mapping ISO 26262 to Abstraction Levels of EAST-ADL2



A Perfect Match!

Glossary

EAST-ADL Association

- The EAST-ADL Association is a non-profit, non-governmental organization with the aim of assisting and promoting the development and application of the EAST-ADL. (www.east-adl.info)

MAENAD

- Model-based Analysis & Engineering of Novel Architectures for Dependable Electric Vehicles. MAENAD is an FP7 project funded by the European Commission. (01.09.10 – 30.08.13, www.maenad.eu)

SAFE

- Safe Automotive soFtware architEcture . SAFE is an ITEA2 funded project (01.07.11 - 30.06.14, www.safe-project.eu)

EATOP

- Working title for future Eclipse project to provide tool platform realization of the EAST-ADL

CESAR, OPENCROSS, pSafeCer, MBAT

- European projects addressing safety certification / qualification for cross domain applications

EAST-EEA, ATESSST, ATESSST2

Finalized predecessor projects from MEANAD

Scope

- EAST-ADL meta-model Implementation supports several versions of EAST-ADL meta-model releases. The meta-model is published in Enterprise architect and taken to generate an Ecore. The generator as well as the EAST-ADL Ecore is part of EATOP.
- Serialization is supported by enabling file and repository based persistency of EAST-ADL models. Serializing and de-serializing EAST-ADL models to and from EAST-ADL XML files and databases.
- Refactoring contains a number of mechanisms to modify EAST-ADL models in a safe way.
- Workspace Management supports managing of EAST-ADL models, which are spread over more than one EAST-ADL XML file.
- Further utilities simplify the handling of EAST-ADL models.
- To enable a seamless workflow in a development process, interfacing and model exchange with
 - Requirements Engineering (via ReqIF),
 - Software modeling (via AUTOSAR) and
 - HW modeling (via IPXACT) is enabled.
- Specific platform developments enabling safety analysis and timing modeling will be included.
- Consolidation of bridges between EATOP and Papyrus and the synchronization of EAST-ADL EMF API with the profile implementation.
- Variability management will be included, supporting both the definition of variant-rich EAST-ADL models as well as derivation of fully/partly configured instances of these models.
- Interoperability with domain independent abstractions of EAST-ADL like CMM/IOS platforms (CMM = CESAR Meta Model / IOS is developed by MBAT).

Organization

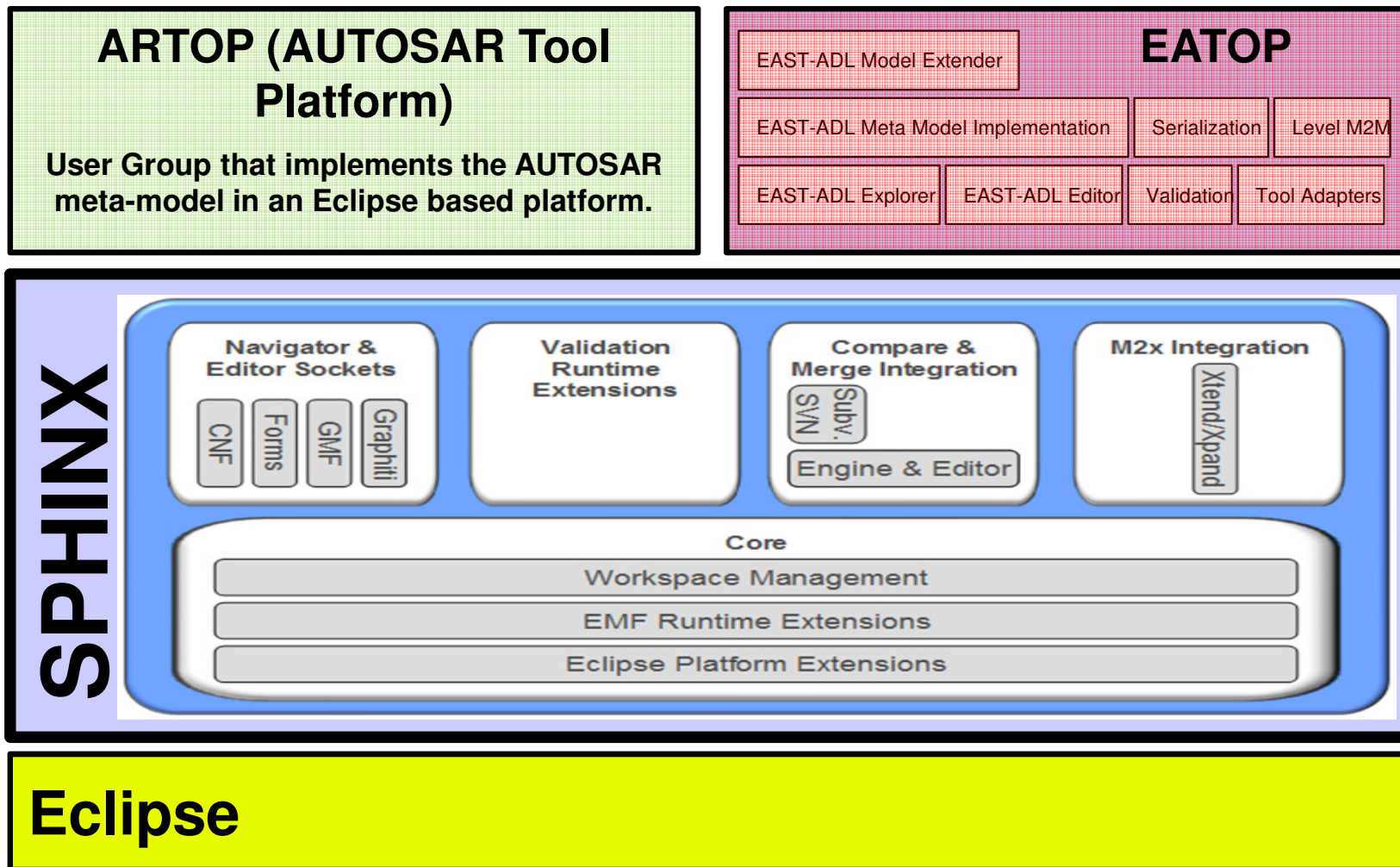
Proposed initial committers

- Continental Automotive GmbH
- Institut Carnot CEA LIST DILS/LISE
- Metacase
- MODEL::SOFT
- Volvo Technology AB
- Technical University Berlin
- OFFIS e.V.

Interested parties

- Continental Automotive France SAS
- University of Augsburg
- University of Applied Sciences Regensburg
- Ohm University of Applied Sciences Nürnberg
- FZI Forschungszentrum Informatik (to be confirmed)
- FORTISS GmbH
- ITEMIS France SARL (to be confirmed)
- Carmeq (to be confirmed)
- Arccore (to be confirmed)

Proposed Architecture



From specification to tool – today's view

